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ALSTON & BIRD, LLP BANK OF AMERICA PLAZA 101 SOUTH TRYON STREET, SUITE 4000 CHARLOTTE, NC 28280-4000			EXAMINER SAUTHER, FLEMMING	
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7 UNITED STATES PATENT AND TRADEMARK OFFICE
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10 BEFORE THE BOARD OF PATENT APPEALS
11 AND INTERFERENCES
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14 *Ex parte* EDWARD LITWINSKI and RAHMATOLLAH F. TOOSKY
15

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17 Appeal 2008-1408
18 Application 10/631,907
19 Technology Center 3600
20

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22 Decided: January 14, 2009
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25 *Before:* WILLIAM F. PATE, III, JENNIFER D. BAHR, and
26 FRED A. SILVERBERG, *Administrative Patent Judges*.
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28 SILVERBERG, *Administrative Patent Judge*.
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31 DECISION ON APPEAL
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34 STATEMENT OF THE CASE

35 Appellants appeal under 35 U.S.C. § 134 (2002) from a Final Office
36 Action of claims 38-46. We have jurisdiction under 35 U.S.C. § 6(b)
37 (2002).

SUMMARY OF DECISION

We REVERSE.

THE INVENTION

The Appellants' claimed invention is directed to a rivet formed of metal or metal alloy having a refined grain structure (Specification 7, ll. 17-24). Claim 38, reproduced below, is representative of the subject matter on appeal.

38. A rivet comprising:
a shank having a head at one end thereof; and
wherein said shank and said head consist essentially of a grain structure having a grain size between about 3 microns and 5 microns.

THE REJECTIONS

The Examiner relies upon the following as evidence of unpatentability:

Briles	US 4,159,666	Jul. 3, 1979
Y.K.K. Corporation	JP 10-195567	Jul. 28, 1998
(as translated, hereinafter "JP '567")		

The following rejections are before us for review:

1. Claims 38-42 are rejected under 35 U.S.C. § 102(b) (2002) as being as being anticipated by JP '567.
2. Claims 43-46 are rejected under 35 U.S.C. § 103(a) (2004) as being unpatentable over JP '567 in view of Briles.

ISSUE

The issue before us is whether the Appellants have shown that the Examiner erred in rejecting claims 38-42 over JP '567, and claims 43-46 over JP '567 in view of Briles. The issue turns on whether JP '567 discloses

1 a shank and head of a rivet consisting essentially of a grain structure having
2 a grain size between about 3 and 5 microns.

4 FINDINGS OF FACT

5 We find that the following enumerated findings are supported by at
6 least a preponderance of the evidence. *Ethicon, Inc. v. Quigg*, 849 F.2d
7 1422, 1427 (Fed. Cir. 1988) (explaining the general evidentiary standard for
8 proceedings before the Office).

- 9 1. The Appellants' Specification discloses a rivet 4 comprising a
10 shank 10 having a head 11 at one end thereof; wherein the shank
11 and the head consist essentially of a grain structure having a grain
12 size between about 3 microns and 5 microns (Specification 7, ll. 4-
13 31).
- 14 2. The Appellants' Specification further discloses that the rivet is
15 formed of aluminum, an aluminum alloy, titanium or a titanium
16 alloy (Specification 3, l. 30).
- 17 3. The Appellants' Specification still further discloses that an end of
18 the shank opposite the head is adapted to be upset to form a
19 another (second) head (Specification 10, ll. 3-14), wherein the
20 shank and the head comprise a refined grain structure formed by
21 stirring with a friction stir welding probe (Specification 7, l. 24-
22 Specification 8, l. 24).
- 23 4. The Appellants' Specification still further discloses that the rivets
24 formed according to the claimed invention have a refined grain
25 structure that resists formation and propagation of cracks, and thus
26 have improved formability so as to resist necking, cracking, or

- 1 tearing during manufacture and installation (Specification 9, ll. 14-
2 17).
- 3 5. JP '567 discloses a rivet comprising aluminum oxide particles,
4 aluminum carbide particles and boride particles dispersed in an
5 aluminum or aluminum alloy matrix (JP '567 Translation [0005]).
- 6 6. JP '567 further discloses the mean grain size of the matrix must not
7 be more than 5 microns (JP '567 Translation [0005] and [0010])
8 and preferably not more than 1 micron (JP '567 Translation
9 [0010]), and the mean grain sizes of the aluminum oxide particles
10 and aluminum carbide particles together being not more than 100
11 nanometers (0.1 microns) (JP '567 Translation [0005]).
- 12 7. JP '567 still further discloses that the volumetric fraction of the
13 boride particles should be under 30% and the total volumetric
14 fraction of both dispersed aluminum oxide particles and aluminum
15 carbide particles should be greater than 0.5% and less than 8% (JP
16 '567 Translation [0005]).
- 17 8. JP '567 still further discloses that a mixture of aluminum or
18 aluminum alloy powder and boric acid can be subjected to friction
19 welding (JP '567 Translation [0006] and [0009]).
- 20 9. Briles discloses a rivet 18 and work 10 may consist of like or
21 unlike materials such as aluminum, aluminum alloy, titanium or
22 titanium alloy (col. 3, ll. 51-53); the rivet comprises a head 20 and
23 a shank 19; and wherein an end of the shank opposite the head is
24 adapted to be upset to form a another (second) head 30.
- 25

PRINCIPLES OF LAW

Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention. *RCA Corp. v. Applied Digital Data Sys., Inc.*, 730 F.2d 1440, 1444 (Fed. Cir. 1984). In other words, there must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention. *Scripps Clinic & Research Found. v. Genentech Inc.*, 927 F.2d 1565, 1576 (Fed. Cir. 1991). It is not necessary that the reference teach what the subject application teaches, but only that the claim read on something disclosed in the reference, i.e., that all of the limitations in the claim be found in or fully met by the reference. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 772 (Fed. Cir. 1983), cert. denied, 465 U.S. 1026 (1984).

“Section 103 forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.’” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). See also *KSR*, 127 S. Ct. at 1734 (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”).

1 Use of the term “consisting essentially of,” preceding list of
2 ingredients in a composition claim, typically means that invention
3 necessarily includes listed ingredients and is open to unlisted ingredients that
4 do not materially affect basic and novel properties of invention; “consisting
5 essentially of” claims occupy middle ground between closed claims that are
6 written in “consisting of” format and fully open claims that are drafted in
7 “comprising” format. *PPG Industries Inc. v. Guardian Industries Corp.*,
8 156 F.3rd 1351 (Fed. Cir. 1998).

9 The term “consists” appearing in a clause in the body of the claims
10 limits only the element(s) set forth in that clause, but does not limit the open-
11 ended “comprising” language appearing earlier in the claims. *In re Crish*,
12 393 F.3d, 1253 (Fed. Cir. 2004).

13 14 ANALYSIS

15 Appellants argue claims 38, 39, 40, 42 and 43 as a group. As such,
16 we select claim 38 as representative of the group, and claims 39, 40, 42 and
17 43 will stand or fall with claim 38. 37 C.F.R. § 41.37(c)(1)(vii) (2007). The
18 Appellants argue claims 41 and 44-46 separately.

19 JP ‘567 discloses a rivet comprising aluminum oxide particles,
20 aluminum carbide particles and boride particles dispersed in a aluminum or
21 aluminum alloy matrix (JP ‘ 567 Translation [0005]) (Fact 5); the mean
22 grain size of the matrix must not be more than 5 microns (JP ‘ 567
23 Translation [0005] and [0010]) and preferably not more than 1 micron (JP ‘
24 567 Translation [0010]); the mean grain sizes of the aluminum oxide
25 particles and aluminum carbide particles together are not more than 100
26 nanometers (0.1 microns) (JP ‘ 567 Translation [0005]) (Fact 6); the

1 volumetric fraction of the boride particles should be under 30% and the total
2 volumetric fraction of both dispersed aluminum oxide particles and
3 aluminum carbide particles should be greater than 0.5% and less than 8% (JP
4 ‘ 567 Translation [0005]) (Fact 7); and a mixture of aluminum or aluminum
5 alloy powder and boric acid can be subjected to friction welding (JP ‘ 567
6 Translation [0006] and [0009]) (Fact 8).

7 Appellants contend that JP ‘567 includes particles of varying sizes and
8 while the mean grain size of the matrix is not more than 5 microns, the grain
9 sizes of the aluminum oxide particles, the aluminum carbide particles and
10 the boride particles are outside the range called for in claim 38 (Br. 7).

11 Appellants further contend that given the significance of the grain size to the
12 formability of the rivets of the claimed invention, a composite material that
13 has a volume as much as 38% of material outside the claimed range cannot
14 be considered to “consist essentially of” the claimed material (Br. 8). The
15 Examiner contends that in JP ‘567 the material not having a grain size of 5
16 microns is such a small percentage of the overall volume (38%) and that the
17 structure would continue to “consist essentially of” the grain size of 5
18 microns (Ans. 3 and 5). The Examiner further contends that the small
19 amount of material which does not fall within the claimed range is “about”
20 within the range (Ans. 3 and 5). The Examiner still further contends that in
21 JP ‘567 a mean grain size of not more than 1 micron is about 3 microns, and
22 since JP ‘567 discloses that the mean grain size of the overall matrix is not
23 more than 5 microns, there must be grains larger than 1 micron that would
24 anticipate the about 3 micron low end of the claimed range (Ans. 7). We
25 agree with Appellants that an overall volume of 38% being outside the
26 claimed range is a significant number. While we agree with the Examiner

1 that a “mean” of not more than 5 microns is an average of not more than 5
2 microns, we find that in JP ‘567, no where is it specifically stated that any of
3 the grains of the matrix are actually within the range of about 3-5 microns as
4 called for in claim 38. We find that to have a mean grain size of no more
5 than 5 microns as disclosed by JP ‘567, all of the grain sizes could be
6 outside the range called for in claim 38. We find that it would be
7 speculative, at best, to assume that any portion of the overall matrix
8 disclosed in JP ‘567 is within the range called for in claim 38.

9
10 **CONCLUSION OF LAW**

11 We conclude that the Appellants have shown that the Examiner erred
12 in rejecting claims 38-42 under 35 U.S.C. § 102(b) as being anticipated by
13 JP ‘567, and claims 43-46 under 35 U.S.C. § 103(a) as being unpatentable
14 over JP ‘567 in view of Briles.

15
16 **DECISION**

17 The decision of the Examiner to reject claims 38-42 over JP ‘567, and
18 claims 43-46 over JP ‘567 in view of Briles is reversed.

19
20 **REVERSED**

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